MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Lion
Region: 3
Hunting District: 350/370
Year: 2016

1. **Describe the proposed season / quota changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.)**

   - Increase the total harvest quota from 3 any legal mountain lion **to 4 any legal mountain lion**. Maintain the female subquota at 1.

During the 2012-13 biennial season setting process, the FWP Commission approved a proposal to reconfigure certain lion management units in Region 3. In this reconfiguration, Hunting Districts 350 and 370 were combined into one LMU. Prior to this they were parts of two separate LMU's. Table 1 shows the harvest that has come from the combination of these two HD's from 2000-2015 along with the season closing dates for the LMU.

Table 1: Mountain lion harvest and closure dates for Hunting District 350/370, 2000-2015

HUNT YEAR	FEMALE TAKEN	MALES TAKEN	TOTAL HARVEST	QUOTA TOTAL	FEMALE CLOSED	SEASON CLOSED
2000	3	3	6			
2001	3	3	6			
2002	2	2	4			
2003	1	2	3			
2004	0	1	1			
2005	1	2	3			
2006	1	2	3			
2007	0	2	2			
2008	0	4	4			
2009	1	1	2			
2010	1	1	2			
2011	1	1	2			
2012	1	2	3	3	12/15/2012	12/28/2012
2013	1	3	4	3	12/18/2013	12/23/2013
2014	1	2	3	3	12/3/2014	12/21/2014
2015	1	3	4	3	12/13/2015	1/1/2016

2. **Why is the proposed change necessary?**

The increased quota is being proposed because it appears the lion population in this LMU can sustain this level of harvest, as evidenced by consistent harvest, relatively short seasons, and an overrun of the quota 2 out of the past 3 years (Table 1).

3. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

The management objective for HD's 350/370 is to maintain the lion population at a sustainable level that provides for maximum chase and harvest opportunity while keeping in balance with the prey population. From 2006-2012, Region 3 lion quotas had been conservative following an 8-year period of liberal harvest opportunity. It appears that the overall reduced quota and decrease in female harvest opportunity during this time period allowed the population to rebound and can now sustain increased harvest.

4. **Provide information related to any weather/habitat factors that have relevance his change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, temperature / precipitation information).**

Access to HD 350/370 is sufficient to allow for the proposed harvest quotas while at the same time seasonal travel restrictions, snow depth and topography allow for large tracts of sanctuary for lions as well.

5. **Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).**

This proposal will be discussed at the annual Region 3 houndsmen meeting in Three Forks on March 8th, as well as with other local sportsmen associations, landowners and local game wardens.

Submitted by: Vanna Boccadori
Date: 4 March 2016

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Lion
Region: 3
Hunting District: 380
Year: 2016-17

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

   The proposal is to increase the total mountain lion quota from 6 to 10 in the district and to increase the female sub-quota from 2 to 4.

Table 1. HD 380 mountain lion harvest information.

Season Year	Total Quota	Female Sub-quota	Harvest		Total Harvest	% Female Q. Filled	% Total Q. Filled	Season Closures
			M	F				
2015	6	2	4	4	8	200%	133%	Female closed 12/19/15; All closed 12/22/15
2014	6	2	6	1	7	50%	116.7%	All closed 12/19/14
2013	6	2	3	3	6	150%	100%	Female closed 12/14/13; All closed 12/16/13
2012	6	2	5	4	9	200%	150%	Female closed 12/13/12; All closed 12/15/12

*Prior to 2012 HD 370 was combined with HD 380 into one mountain lion management zone.

2. **What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The objective of the proposal is to affect a decrease in mountain lion numbers in HD 380. Mule deer numbers on public land in HD 380 continue to be down. There is the potential that mountain lion predation on mule deer in the HD may be a contributing factor to keeping mule deer number suppressed in the Elkhorn Mountains. Other factors (habitat, weather, harvest, non mountain lion predation) may also be contributing to keeping mule deer from bouncing back in this area and may very well be more limiting than mountain lion predation. Regardless, the desire is to see if we can reduce mountain lion populations in the Elkhorns to some extent in the hope that we get a bump in mule deer numbers.

3. **How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

Mountain lion harvest information will be monitored via mandatory checks and MFWP's MRRE system. Future comments from houndsmen, landowners and hunters may help indicate what if any impact the quota changes have on the management zone's mountain lion population; although, the utility of lion sightings, houndsmen efforts, etc to actually detect a change in mountain lion populations is quite questionable (Robinson and Desimone 2011). Ages of harvested mountain lions will be monitored via pulled teeth to determine if the age structure of the mountain lion population particularly that of the male segment is being negatively impacted as a result of the quota increases. In addition, age information on harvested females can give use an idea of the percentage of adult females in the harvest which may provide an indication of harvest impacts on the overall population.

4. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

There is currently no official population management objective for mountain lions in this management zone. The Department developed mountain lion population estimates for all the different mountain lion management zones in the state several years ago using a resource selection function (RSF) model (Robinson et al. 2013). However, these estimates have not been validated in the various districts across the entire state, so it's unknown how accurate they are in the different districts or eco-regions of the state – some recent research indicates that they may not be that accurate. An RSF generated total population estimate was made for HDs 370 and 380 combined (two districts used to be in the same zone up until 2012) which put the total lion population somewhere in the mid 30s. Based on the model, the population was felt to be relatively stable. Once again it is unknown how accurate the initial population estimates were and how accurate the model projections were.

Another way to estimate the lion population for the new management zone area is to estimate the population size based on some crude density estimates. Looking at where mountain lions have been harvested in the past and overlaying potential mountain lion habitat based on vegetation and topography with mule deer and elk winter range information in the two hunting districts, it is estimated that there may be approximately 1,214 km^2 of potential winter mountain lion habitat in the management zone. Based on published mountain lion research done elsewhere in Montana and the western United States and Canada, it appears that a total independent mountain lion (≥ 1.5 yrs) density of at least 3.0 lions/100km^2 of winter lion habitat may not be unreasonable for this area, which would yield a total estimated independent mountain lion population size of approximately 36 lions. At an estimated independent mountain lion population size of 36, a total quota of 10 lions would yield a harvest rate of approximately 27.8% of the independent (≥ 1.5 yrs) population which is believed to be sustainable but starting to get to the high side of what lion populations are believed to be capable of withstanding without a population decline. Most lion populations typically have 2.5x – 3x as many sub-adult/adult females as sub-adult/adult males in the population. With that in mind, the estimated 36 independent mountain lions might be comprised roughly of 26 independent females and 10 independent males. If the female sub-quota of 4 were filled this would be a 15.4% harvest rate on the estimated number of independent females. Research indicates that around 20% total female mortality from all sources (hunting & non-hunting) is likely the threshold at which mountain lion populations start to decline. Given the potential rate of harvest, only 2 additional female lions would need to die from any form of mortality to exceed that 20% threshold. It's highly likely that would happen as a result of natural mortality, incidental trapping, accidents, etc.

Obviously, trying to extrapolate mountain lion densities to areas other than where the research was done must be approached with great caution. Mountain lion densities could be lower or greater than the numbers used above, which would of course impact population estimates. Unfortunately, not having any mountain lion population information, or having any mountain lion population research done in Montana east of the continental divide in habitats which may be similar to that found in the Elkhorn Mountains, makes making biologically sound management decisions related to mountain lions rather difficult.

Harvest information for the zone is provided in Table 1.

5. **Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).**

Lion habitat in the area is believed to be good overall with ample numbers of prey consisting of mule deer (numbers at least on public land are believed to be down considerably), white-tailed deer and elk among big game species. Good prey numbers likely provide incentive for mountain lions to immigrate into the area which would help to maintain a healthy mountain lion population at least in regards to numbers. Access in the zone varies with some areas of the HD having good access for lion hunting and other areas having relatively little to no access for lion hunting because of USFS road closures for big game winter range or

landownership patterns make them difficult areas to hunt. It's felt that the access limitations in the HD likely provides a refuge from harvest for some lions in the HD. These areas could act as a source population for other areas with more motorized access that would act like mortality sinks in the HD. Weather conditions may negatively affect mountain lion harvest, however, weather conditions the last couple of years have afforded lion hunters ample opportunity to harvest any available mountain lions.

Overall (resident and nonresident) hunter opportunity will be increased, as the quota change proposal will result in an increase in both the total number of mountain lions and the number of female mountain lions allowed for harvest. Both the total quota and the female sub-quota are typically filled fairly quickly ('race' type situation) in the zone, if good snow conditions are present.

6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

MFWP personnel from R3 met with a group of Region 3 houndsmen in early-March to visit about potential mountain lion changes in the Region. A couple of individuals from the Boulder area at the meeting were generally opposed to the original proposal of having a total quota of 10 lions with a female sub-quota of 5. But, in conversations with them after the meeting, they indicated that they would probably be okay with a total quota of 10 with a female sub-quota of 4. Contacts made with local Townsend area houndsmen indicated that they were generally supportive of the proposal as most thought lions were generally pretty plentiful in the Elkhorns. Some local hunters and landowners think there are too many lions in the area and blame mountain lions for lower than desired mule deer populations. The proposal was discussed with the local game wardens, Justin Feddes and Bill Dawson, who were supportive of or at least okay with the proposal.

Literature Cited:

Robinson et al. 2013. Linking resource selection and mortality modeling for population estimation of mountain lions in Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Division, Helena, MT, 81 pp.

Robinson, H.S. and R.M. DeSimone. 2011. The Garnet Range mountain lion study: Characteristics of a hunted population in west-central Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Bureau, Helena, MT. 102 pp.

Submitted by: **Adam Grove, Wildlife Biologist – Townsend**

Date: 3/15/16

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Lion
Region: 3
Hunting District: 390 & 391
Year: 2016-17

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

   The proposal is to increase the total mountain lion quota from 8 to 10and to increase the female sub-quota from 4 to 5.

Table 1. HDs 390 & 391 mountain lion harvest information.

Season Year	Total Quota	Female Sub-quota	Harvest		Total Harvest	% Female Q. Filled	% Total Q. Filled	Season Closures
			M	F				
2015	8	4	5	4	9	100%	112.5%	All closed on 12/13/15
2014	8	4	6	4	10	100%	125%	All closed on 12/20/14
2013	6	2	5	3	8	150%	133%	All closed on 12/11/13
2012	6	2	4	2	6	100%	100%	F closed 12/10/12 M closed 2/15/13
2011	4	2	2	2	4	100%	100%	F closed 12/3/11 M closed 12/10/11
2010*	4	2	3	2	5	100%	125%	F closed 12/7/10 M closed 12/23/10

*Prior to 2010 HDs 390 & 391 were combined with HD 392 into one mountain lion management zone.

2. **What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The proposal is to increase both the overall mountain lion quota and female sub-quota in the lion management zone as a result of the recent changes to the HDs 391 and 392 boundaries. The Meagher County portion of HD 391 was given to Region 4 and is now HD 451, while the HD 391/392 boundary was moved from Duck Creek further north to primarily Avalanche Creek (see attached maps that show old the HD boundaries and the new HD boundaries). The net result of the boundary changes was to put more mountain lion habitat into the HDs 390 & 391 lion management zone. There would be no net change in the total quota or total female sub-quota for the west side of the Big Belts (HD 392 zone & HDs 390/391 zone) as a result of this proposal and the corresponding HD 392 zone proposal. Quotas in this zone were raised a couple of years ago in an effort to reduce mountain lion populations in this zone to some extent. The objective is to try and maintain the status quo in regards to overall mountain lion harvest in this area, and its impacts on the current population, i.e. continue to work towards a decline in mountain lion numbers.

3. **How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

Mountain lion harvest information will be monitored via mandatory checks and MFWP's MRRE system. Future comments from houndsmen, landowners and hunters may help indicate what if any impact the quota changes have on the management zone's mountain lion population; although, the utility of lion sightings, houndsmen efforts, etc to actually detect a change in mountain lion populations is quite questionable

(Robinson and Desimone 2011). Ages of harvested mountain lions will be monitored via pulled teeth to determine if the age structure of the mountain lion population particularly that of the male segment is being negatively impacted as a result of the quota increases. In addition, age information on harvested females can give use an idea of the percentage of adult females in the harvest which may provide an indication of harvest impacts on the overall population.

4. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

There is currently no official population management objective for mountain lions in this management zone. The Department has developed mountain lion population estimates for all the different mountain lion management zones in the state using a resource selection function model (Robinson et al. 2013). However, these estimates have not been validated in the various districts across the entire state, so it's unknown how accurate they are in the different districts or eco-regions of the state – some recent research indicates that they may not be that accurate. For the HDs 390 & 391 management zone the total lion population was estimated to have grown from a mean estimate of 27 (range 19-36) in 2005 to 40 lions in 2010. When the zone quota was 6 the population model estimated that the zone population would be reduced to 22 animals by 2015 based on an estimated 2010 population of 40 animals and an estimated 12 adult females (2010). Given that the zone quota was 8 the last couple of years (with quota over-runs), it would have been expected that the population in the old HD 390/391 zone would have declined even more substantially, if model projections were accurate. Although, once again it is unknown how accurate the initial population estimates were and how accurate the model projections were. However, given the mountain lion harvest and how quickly the old zone has closed the last couple of years, it's hard to believe that the population is low or has declined to any great extent particularly given comments from some of the local houndsment. Although, it's possible that increased immigration rates are keeping the population relatively high.

Another way to estimate the lion population for the new management zone area is to estimate the population size based on some crude density estimates. Looking at where mountain lions have been harvested in the past and overlaying potential mountain lion habitat based on vegetation and topography with mule deer and elk winter range information in the two hunting districts, it is estimated that there may be approximately 1,156 km^2 of potential winter mountain lion habitat in the management zone. Based on published mountain lion research done elsewhere in Montana and the western United States and Canada, it appears that a total independent mountain lion (≥ 1.5 yrs) density of at least 3.0 lions/100km^2 of winter lion habitat may not be unreasonable for this area, which would yield a total estimated independent mountain lion population size of approximately 35 lions. At an estimated independent mountain lion population size of 35, a total quota of 10 lions would yield a harvest rate of approximately 28.6% of the independent population which is believed to be starting to get to the high side of what lion populations can withstand. Most lion populations typically have 2.5x – 3x as many sub-adult/adult females as sub-adult/adult males in the population. With that in mind, the estimated 35 independent mountain lions might be comprised roughly of 25 independent females and 10 independent males. If the female sub-quota of 5 were filled this would be a 20% harvest rate on the estimated number of independent females which is believed to be about the threshold for total adult female mortality from all sources (hunting & non-hunting) at which mountain lion populations start to decline. Additional female mortality from other sources is quite likely.

Obviously, trying to extrapolate mountain lion densities to areas other than where the research was done must be approached with great caution. Mountain lion densities could be lower or greater than the numbers used above, which would of course impact population estimates. Unfortunately, not having any mountain lion population information, or having any mountain lion population research done in Montana east of the continental divide in habitats which may be similar to that found in the Big Belt Mountains, makes making biologically sound management decisions related to mountain lions rather difficult.

Harvest information for the zone is provided in Table 1.

5. **Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security,**

hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).

Lion habitat in the area is believed to be good overall with ample numbers of prey consisting of mule deer (numbers currently down to some degree at least in some areas), white-tailed deer and elk (above objective in the management zone) among big game species. Good prey numbers likely provide incentive for mountain lions to immigrate into the area which would help to maintain a healthy mountain lion population in regards to total numbers. Access in the zone varies with much of HD 390 being private land where access for mountain lion hunting is somewhat limited; although, many of the landowners that don't allow access for elk or mule deer hunting will allow some access for mountain lion hunting. HD 391 has a mixture of public (USFS) and private land where access is reasonable for mountain lion hunting. Access to areas where mountain lions might be found during the winter on USFS land is generally decent; although, it's believed that due to winter prey distribution many lions are probably found on or near private land in the district. Weather conditions may negatively affect mountain lion harvest, however, weather conditions the last couple of years have afforded lion hunters ample opportunity to harvest any available mountain lions.

Overall (resident and nonresident) hunter opportunity will be increased, as the quota change proposal will result in an increase in both the total number of mountain lions and the number of female mountain lions allowed for harvest. Both the total quota and the female sub-quota are typically filled fairly quickly ('race' type situation) in the zone, if good snow conditions are present.

6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

MFWP personnel from R3 met with a group of Region 3 houndsmen in early-March to visit about potential mountain lion changes in the Region. No comments were received at the meeting regarding this proposal or the management zone in general. Comments received from contacted local Townsend area houndsmen indicated that they were generally supportive of the proposal or at least okay with it. Although, estimates of current lion numbers varied with some people thinking that lion numbers in the Big Belts are still high to another individual who felt that lion numbers are down considerably in the Big Belts from several years ago. Many local hunters and landowners think there are too many lions in the area and blame mountain lions for lower than desired mule deer populations. The proposal was discussed with the local game warden, Justin Feddes, who was supportive of the proposal.

Literature Cited:

Robinson et al. 2013. Linking resource selection and mortality modeling for population estimation of mountain lions in Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Division, Helena, MT, 81 pp.

Robinson, H.S. and R.M. DeSimone. 2011. The Garnet Range mountain lion study: Characteristics of a hunted population in west-central Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Bureau, Helena, MT. 102 pp.

Submitted by: **Adam Grove, Wildlife Biologist – Townsend**
Date: 3/15/16

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

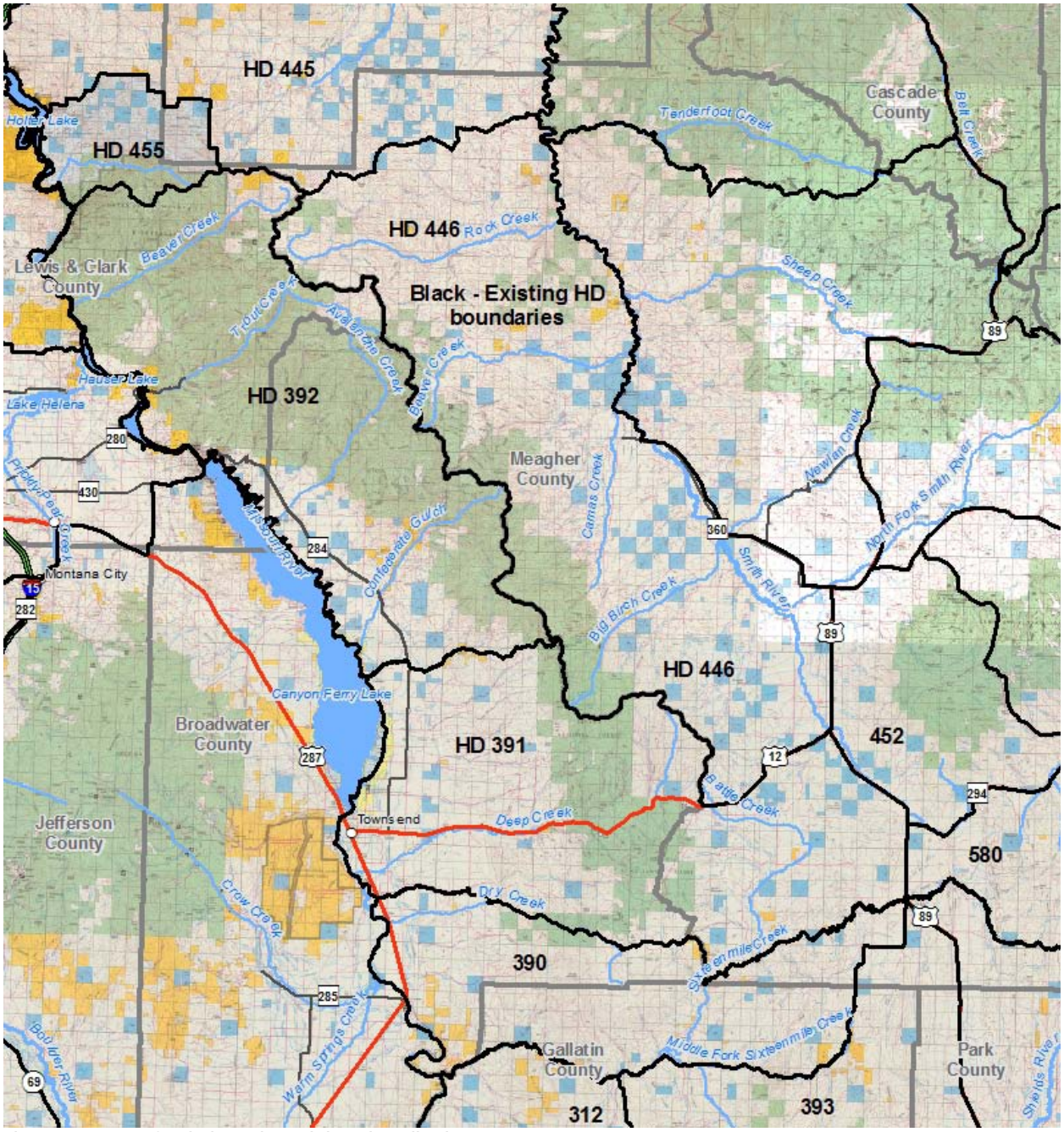

Figure 1. Map of existing Big Belt hunting districts.

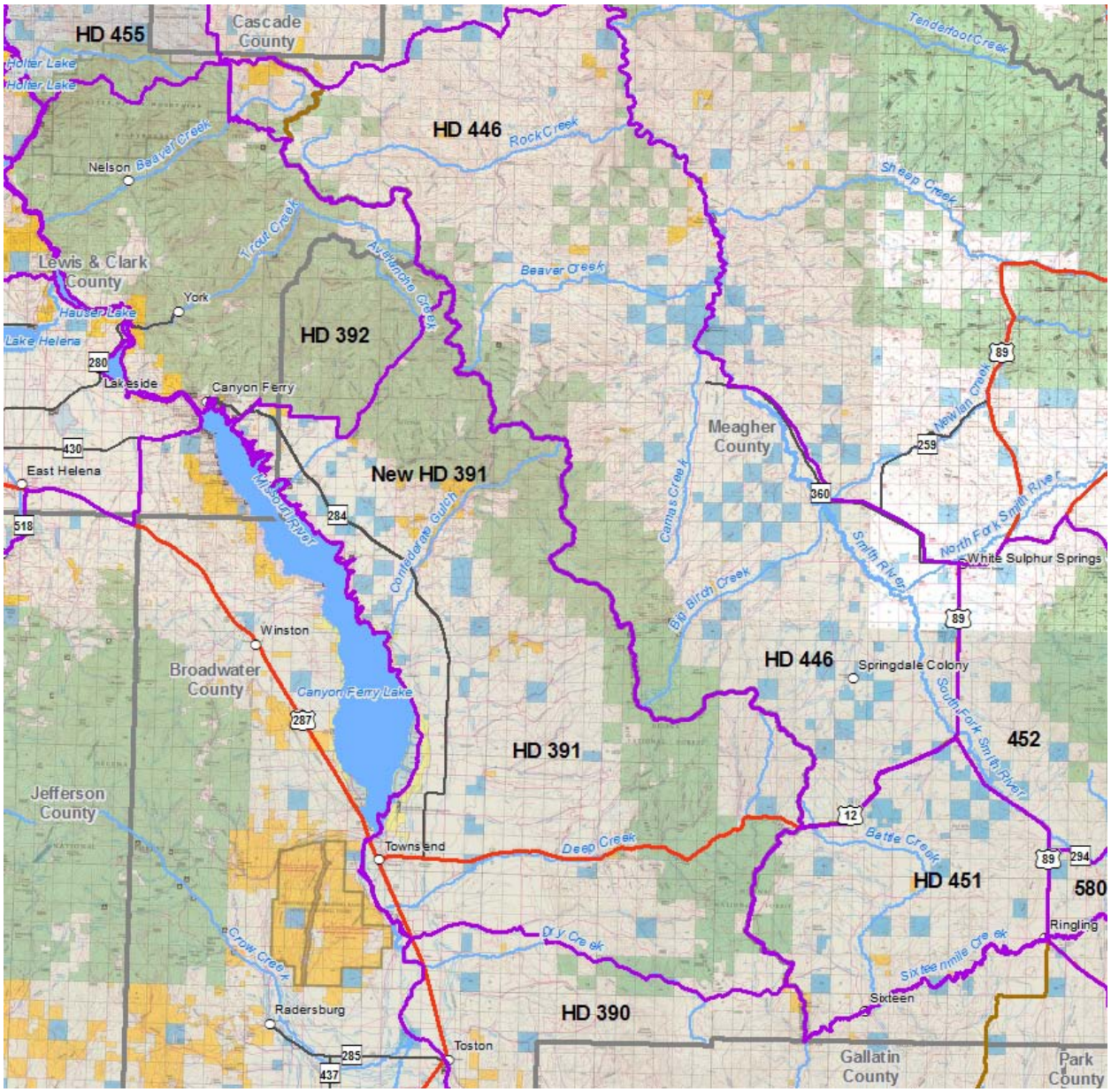

Figure 2. New Big Belt hunting district boundaries.

MONTANA FISH, WILDLIFE & PARKS
HUNTING SEASON / QUOTA CHANGE SUPPORTING INFORMATION

Species: Mountain Lion
Region: 3
Hunting District: 392
Year: 2016-17

1. **Describe the proposed season / quotas changes and provide a summary of prior history (i.e., prior history of permits, season types, etc.).**

   The proposal is to decrease the total mountain lion quota from 5 to 3 in the district and to change the female sub-quota from 2 to 1.

Table 1. HD 392 mountain lion harvest information.

Season Year	Total Quota	Female Sub-quota	Harvest		Total Harvest	% Female Q. Filled	% Total Q. Filled	Season Closures
			M	F				
2015	5	2	4	2	6	100%	120%	Female close 12/14/15; All closed 12/17/15
2014	5	2	4	2	6	100%	120%	All closed 12/20/14
2013	5	2	3	2	5	100%	100%	Female closed 12/10/13; All closed 12/19/13
2012	5	2	4	2	6	100%	120%	Female closed 12/9/12; All closed 12/10/12
2011	5	2	2	5	7	250%	140%	Female closed 12/5/11; All closed 12/6/11
2010*	5	2	3	3	6	150%	120%	Female closed 12/6/10; All closed 12/7/10

*Prior to 2010 HDs 390 & 391 were combined with HD 392 into one mountain lion management zone.

2. **What is the objective of this proposed change? This could be a specific harvest amount or resulting population level or number of game damage complaints, etc.**

The proposal is to decrease the total mountain lion quota in the lion management zone as a result of the recent changes to the HDs 391 and 392 boundaries. The HD 391/392 boundary was moved from Duck Creek further north to primarily Avalanche Creek (see attached maps that show old the HD boundaries and the new HD boundaries) resulting in a fairly significant decrease in the size of HD 392 and therefore a fairly significant decrease in the amount of mountain lion habitat in HD 392. As a result of this proposal and the corresponding HDs 390/391 zone proposal, there would be no net change in the total quota or total female sub-quota for the west side of the Big Belts (HD 392 zone & HDs 390/391 zone). The objective is to try and maintain the status quo in regards to overall mountain lion harvest in this area, and its impacts on the current population.

3. **How will the success of this proposal be measured? This could be annual game or harvest surveys, game damage complaints, etc.**

Mountain lion harvest information will be monitored via mandatory checks and MFWP's MRRE system. Future comments from houndsmen, landowners and hunters may help indicate what if any impact the quota

changes have on the management zone's mountain lion population; although, the utility of lion sightings, houndsmen efforts, etc to actually detect a change in mountain lion populations is quite questionable (Robinson and Desimone 2011). Ages of harvested mountain lions will be monitored via pulled teeth to determine if the age structure of the mountain lion population particularly that of the male segment is being negatively impacted as a result of the quota increases. In addition, age information on harvested females can give use an idea of the percentage of adult females in the harvest which may provide an indication of harvest impacts on the overall population.

4. **What is the current population's status in relation to the management objectives? (i.e., state management objectives from management plan if applicable; provide current and prior years of population survey, harvest, or other pertinent information).**

There is currently no official population management objective for mountain lions in this management zone. The Department has developed mountain lion population estimates for all the different mountain lion management zones in the state using a resource selection function model (Robinson et al. 2013). However, these estimates have not been validated in the various districts across the entire state, so it's unknown how accurate they are in the different districts or eco-regions of the state – some recent research indicates that they may not be that accurate. Based on some follow up to Robinson et al.'s original 2013 report, the RSF model estimated population for the old (pre-boundary change) HD 392 for the spring of 2014 was approximately 34 total lions of which approximately 50% would be expected to be adult (> 24 months) males or females in a ratio of approximately 2.5 females per male. The population was believed to be fairly stable under the current quota. However, once again it is unknown how accurate the initial population estimates were and how accurate the model projections were.

Another way to estimate the lion population for the new management zone area is to estimate the population size based on some crude density estimates. Looking at where mountain lions have been harvested in the past and overlaying potential mountain lion habitat based on vegetation and topography with mule deer and elk winter range information in the two hunting districts, it is estimated that there may be approximately 421 km^2 of potential winter mountain lion habitat in the current (post boundary change) management zone. Based on published mountain lion research done elsewhere in Montana and the western United States and Canada, it appears that a total independent mountain lion (≥ 1.5 yrs) density of at least 3.0 lions/100km^2 of winter lion habitat may not be unreasonable for this area, which would yield a total independent mountain lion estimated population size of approximately 13 lions. At an estimated independent mountain lion population size of 13, a total quota of 3 lions would yield a harvest rate of approximately 23.1% of the independent mountain lion population which is believed to within the acceptable range of sustainable harvest limits. As mentioned previously, lion populations typically have 2.5x – 3x as many females as males in the population. With that in mind, the estimated 13 independent mountain lions might be comprised roughly of 9 independent females and 4 independent males. If the female sub-quota of 1 were filled this would be a 11.1% harvest rate on the estimated number of independent females which is sustainable based on research information.

Obviously, trying to extrapolate mountain lion densities to areas other than where the research was done must be approached with great caution. Mountain lion densities could be lower or greater than the numbers used above, which would of course impact population estimates. Unfortunately, not having any mountain lion population information, or having any mountain lion population research done in Montana east of the continental divide in habitats which may be similar to that found in the Big Belt Mountains, makes making biologically sound management decisions related to mountain lions rather difficult.

Harvest information for the zone is provided in Table 1.

5. **Provide information related to any weather/habitat factors, public or private land use or resident and nonresident hunting opportunity that have relevance to this change (i.e., habitat security, hunter access, vegetation surveys, weather index, snow conditions, and temperature / precipitation information).**

Lion habitat in the area is believed to be good overall with ample numbers of prey consisting of mule deer (numbers currently down to some degree at least in some areas), white-tailed deer and elk among big game species. Good prey numbers likely provide incentive for mountain lions to immigrate into the area which would help to maintain a healthy mountain lion population. The new HD 392 is mostly public (USFS) land with good motorized access to many watersheds. Weather conditions may negatively affect mountain lion harvest, however, weather conditions the last couple of years have afforded lion hunters ample opportunity to harvest any available mountain lions.

Overall (resident and nonresident) hunter opportunity will be decreased, as the quota change proposal will result in a decrease in both the total number of mountain lions and the number of female mountain lions allowed for harvest. Both the total quota and the female sub-quota are typically filled fairly quickly ('race' type situation) in the zone, if good snow conditions are present.

6. Briefly describe the contacts you have made with individual sportsmen or landowners, public groups or organizations regarding this proposal and indicate their comments (both pro and con).

MFWP personnel from R3 met with a group of Region 3 houndsmen in early-March to visit about potential mountain lion changes in the Region. No comments were received at the meeting regarding this lion management zone. Comments received from contacted local Townsend area houndsmen indicated that they were generally supportive of the proposal or at least okay with it. Although, estimates of current lion numbers varied with some people thinking that lion numbers in the Big Belts are still high to another individual who felt that lion numbers are down considerably in the Big Belts from several years ago. Many local hunters and landowners think there are too many lions in the area and blame mountain lions for lower than desired mule deer populations. The proposal was discussed with the local game warden, Justin Feddes, who was supportive of the proposal.

Literature Cited:

Robinson et al. 2013. Linking resource selection and mortality modeling for population estimation of mountain lions in Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Division, Helena, MT, 81 pp.

Robinson, H.S. and R.M. DeSimone. 2011. The Garnet Range mountain lion study: Characteristics of a hunted population in west-central Montana. Final Report, Montana Department of Fish, Wildlife & Parks, Wildlife Bureau, Helena, MT. 102 pp.

Submitted by: **Adam Grove, Wildlife Biologist – Townsend**
Date: 3/15/16

Approved: _____
Regional Supervisor / Date

Disapproved / Modified by: _____
Name / Date

Reason for Modification:

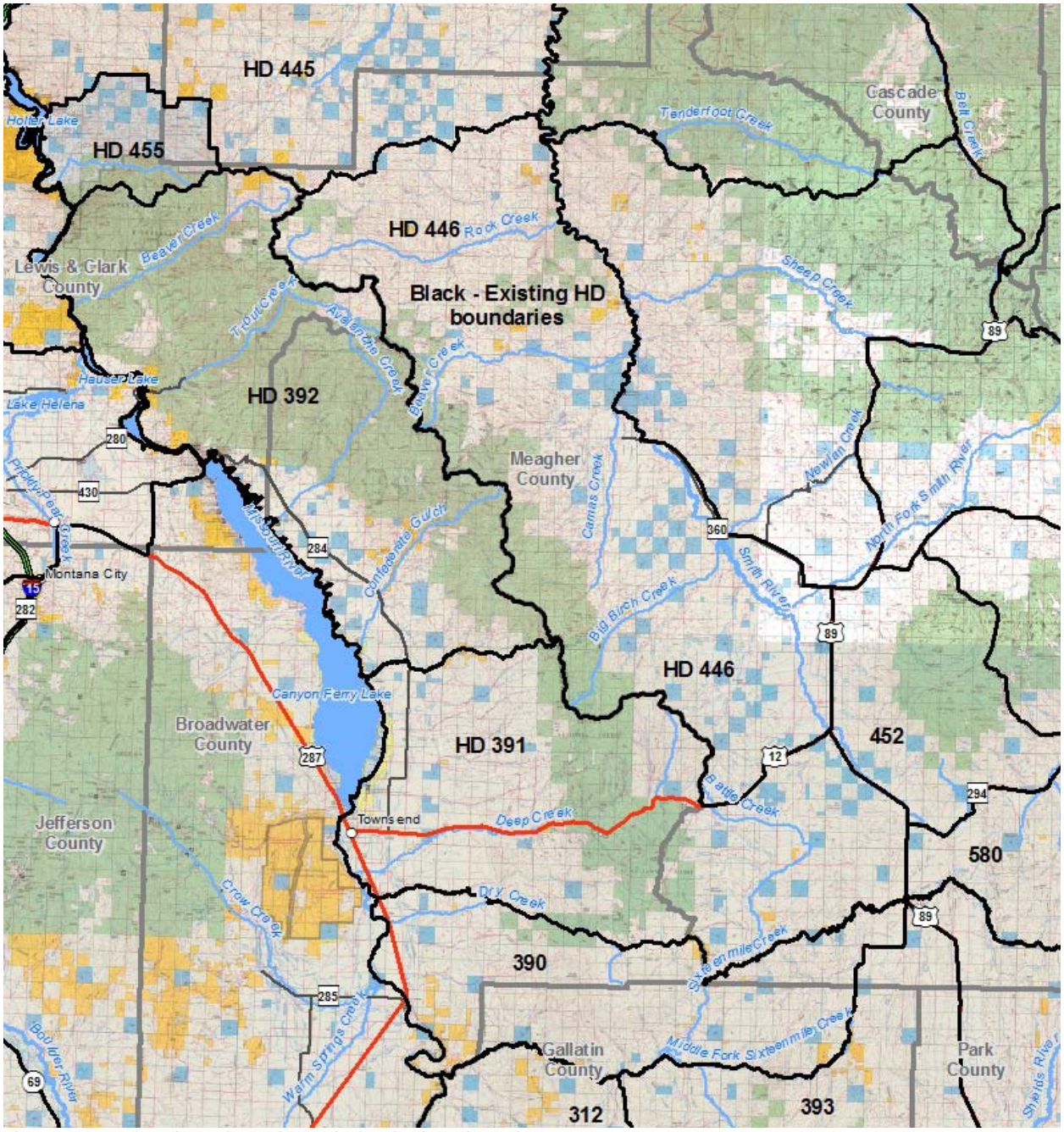

Figure 1. Current (2015) HD boundaries in the Big Belts.

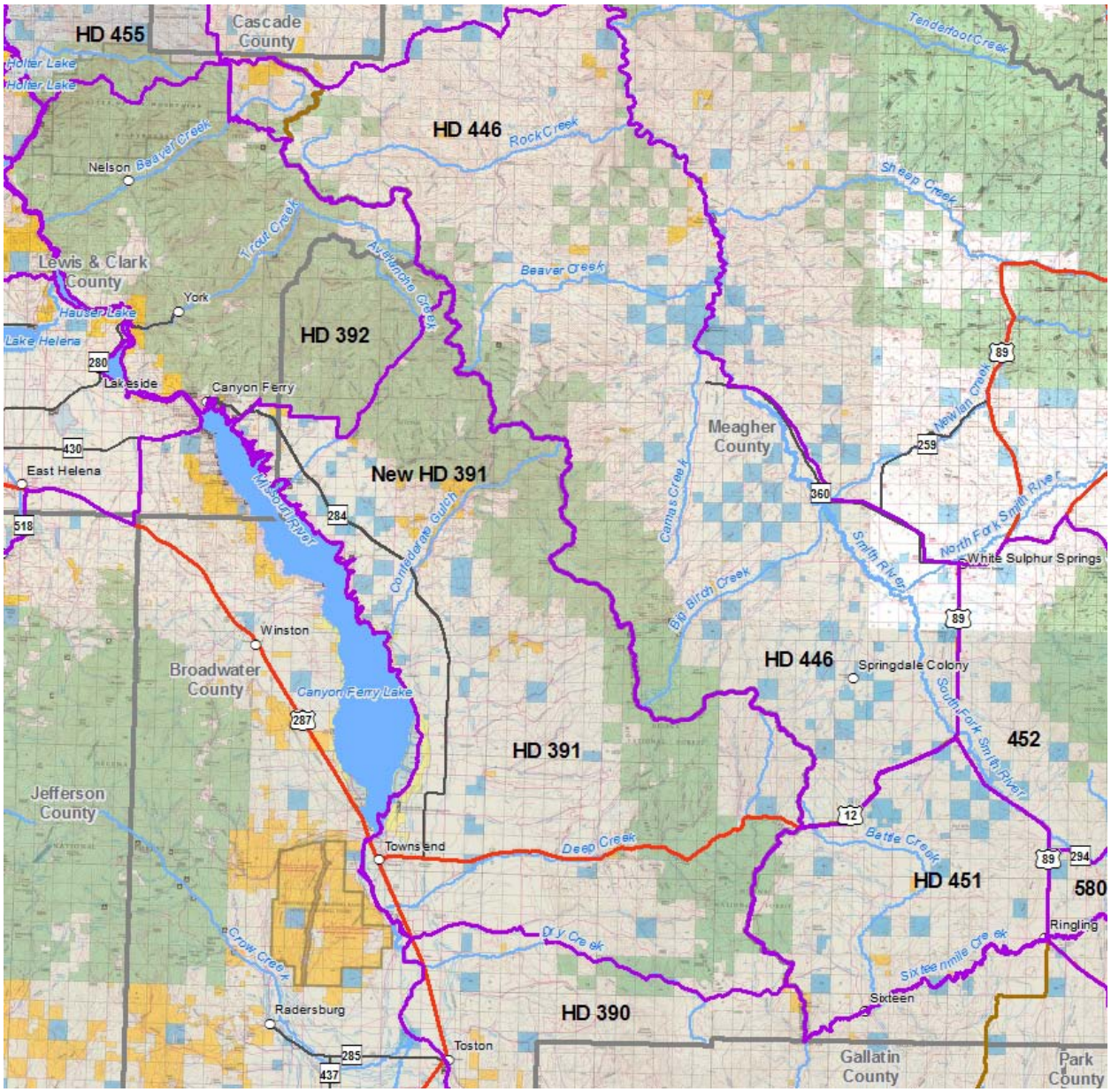

Figure 2. New (2016) HD boundaries in the Big Belts.